O₂-Therapy is a function providing non-invasive respiratory support through e.g. high flows of warmed, humidified, oxygen-enriched air to patients. It is typically used for spontaneously breathing patients who require oxygen at higher flow rates. Especially high flow nasal cannula (HFNC) oxygen therapy can provide respiratory support for patients with acute hypoxemic respiratory failure and may help to prevent subsequent intubation.
Endotracheal intubation has been common practice when treating respiratory distress, but it comes with a variety of potential risks, including airway damage and infection.\textsuperscript{1,2,3}

High flow nasal oxygen is the most widely applied intervention for the treatment of hypoxemic respiratory failure due to COVID-19.\textsuperscript{4}

Prevent intubation as long as possible and secure the weaning in the recovery phase

MECHANICAL VENTILATION
As non-invasive as possible, as invasive as necessary. Along the Respiration Pathway a variance and diversity of treatment tools clearly improve the clinical decision-making.
Smooth and seamless transition from $O_2$ Therapy through NIV to invasive ventilation and back.

3 Ni YN et al. The effect of high-flow nasal cannula in reducing the mortality and the rate of endotracheal intubation when used before mechanical ventilation compared with conventional oxygen therapy and noninvasive positive pressure ventilation. A systematic review and meta-analysis. Am J Emerg Med. 2018 Feb
4 Menga LS et al. Noninvasive respiratory support for acute respiratory failure due to COVID-19 Curr Opin. Crit Care. 2022 Feb
This is \( O_2 \)-Therapy

\( O_2 \)-Therapy (high flow oxygen therapy) is suitable for use as respiratory support for adults, paediatric patients, and neonates who can inhale and exhale spontaneously. In \( O_2 \)-Therapy, a set flow of heated and humidified breathing gas with a specified oxygen concentration is supplied to the patient. This continuous oxygen flow could be applied via oxygen masks or nasal cannulas.

**Conventional oxygen therapy**

Conventional oxygen therapy is the administration of oxygen at a greater concentration than found in ambient air in order to treat or prevent the symptoms and manifestations of hypoxia. It uses nasal prongs or masks and has a maximum effective flow of approximately ten liters per minute. At this rate, no significant increase in expiratory pressure can be attained. To prevent mucosa from drying out, humidification of the gas stream is generally recommended at flow rates that exceed two liters per minute and is achieved by bubbling the gas through a container of sterile water.

**High flow oxygen therapy**

High flow oxygen therapy is typically applied with a special binausal high flow nasal cannula (HFNC) which is comfortable for the patient and can be used continuously for extended periods of time. The flow rates will be typically set between 30 l/min and 50 l/min. This high flow can provide more constant inspiratory oxygen concentrations than conventional oxygen therapy and can also generate some positive airway pressure. HFNC is used with the application of heated and humidified blended air. This may prevent mucosal drying and associated disadvantages. It requires only a source of oxygen and compressed air as well as a heating/humidification system.

“Supplemental oxygen is an essential component of intensive care and is a commonly used therapy worldwide. The primary goal of oxygen therapy is to prevent hypoxaemia.”

Jean-Louis Vincent
ICU Management & Practice, 2021

The role of oxygen therapy

COVID-19 has driven clinicians to rapidly change common care processes and practices in an effort to battle this previously unknown pathogen. It has also resulted in new breakthroughs in the treatment of patients in respiratory distress. Out of the devastation of the COVID-19 pandemic has come many lessons learned and best practices to carry healthcare delivery forward. The benefits of oxygen therapy via HFNC in cases where this non-invasive therapy is appropriate were observed for example on certain SARS-CoV-2 patients at the University of Chicago Medicine (2020) and have since been extended to other care areas. Perhaps expanded use of HFNC will continue in the years ahead, offering clinicians a less traumatic and less risky intervention for patients in respiratory distress.
By using Dräger ventilators you can conveniently switch your patient between traditional invasive ventilation to non-invasive ventilatory support or HFNC to meet changing needs all while still using the same device. This approach also supports you by the successful transition of patients on oxygen therapy to wean them/move them out of your ICU.

Due to the unsecured airways the safety of your patient during the application of high flow oxygen is key and the overarching goal of lung protective ventilation starts already here. Therefore, a limitation of the maximum pressure with respective adaptation of the flow depending on the individual patient conditions is crucial.

Our $O_2$-Therapy function enables a **Safeguarding High Flow Therapy** as you have the possibility of a $P_{\text{max}}$ setting. A possible exceeding of the set maximum allowed airway pressure is detected early, and the flow is reduced accordingly. This not only reduces the number of alarms, but also may help to increase your patients’ safety. On the basis of the inspiratory measured values for pressure and flow, a possible exceeding of the set value $P_{\text{max}}$ is detected early and the set flow is reduced accordingly. As long as the set value $P_{\text{max}}$ is not exceeded, the set flow and measured flow match. If e.g. patient conditions change the applied flow will automatically be reduced in order not to exceed the set $P_{\text{max}}$. A corresponding alarm is generated if the supplied flow is reduced to less than 90% or 50% of the set flow.

**$O_2$-Therapy main screen of the Evita V800 with graphical trends and parameter fields:**

During $O_2$-Therapy, the $O_2$ concentration ($FiO_2$), the inspiratory flow (Device flow), and the mean airway pressure ($P_{\text{mean}}$) are monitored. The measured value $P_{\text{mean}}$ shows the pressure which is generated by the applied flow through the used e.g. nasal cannulas. The alarm limits for $FiO_2$ and Device flow monitoring are automatically set by the device. The alarm limit to not exceed a desired $P_{\text{mean}}$ value can be set by $P_{\text{max}}$.

**$O_2$-Therapy settings:**

For the start-up of $O_2$-Therapy, pressure and flow are configurable in the system set-up menu, individually adaptable to e.g. the patient category and type of oxygen therapy.
Proven facts: improved outcome with O₂-Therapy

High flow nasal oxygen therapy reduced the need for non-invasive ventilation by 80 %, reduced episodes of oxygen desaturation by 66 %, reduced the need for reintubation by 80 %.¹

The use of high flow nasal oxygen ... in adult patients with COVID-19 related acute hypoxemic respiratory failure may lead to an increase in ventilator-free days and a reduction in ICU length of stay.²

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Customer Insights

“Being able to use the same device right through the patient respiratory care pathway has brought with it a number of benefits ... we’ve saved valuable time, we use less equipment and it’s a much more comfortable patient journey.”

Vicky Chamberlain
Critical Care Technician, Glenfield Hospital, UK

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**O₂-THERAPY IS AVAILABLE FOR THE FOLLOWING DRÄGER ICU VENTILATORS:**

- Evita® V800
- Evita® V600
- Babylog VN800
- Babylog VN600

**THE O₂-THERAPY FUNCTION PROVIDES THE FOLLOWING OPPORTUNITIES:**

<table>
<thead>
<tr>
<th>TECHNICAL DATA</th>
<th>Evita V600/V800</th>
<th>Babylog VN600/VN800</th>
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<tbody>
<tr>
<td>Pre configurable for start-up per patient category</td>
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<td>✓</td>
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<tr>
<td>O₂ Concentration - FiO₂</td>
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<td>21 to 100%</td>
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<tr>
<td>Continuous flow rates per patient category</td>
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<td></td>
</tr>
<tr>
<td>Adults</td>
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</tr>
<tr>
<td>Paediatric patients</td>
<td>2 to 30 L/min</td>
<td>2 to 30 L/min</td>
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<tr>
<td>Neonates</td>
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<td>2 to 15 L/min</td>
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<tr>
<td>Maximum airway pressure (Pmax)</td>
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<tr>
<td>Setting of Pmax</td>
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<td>Automatic flow adaptation for Pmax</td>
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<td>Alarm indication for</td>
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<tr>
<td>Flow reduction</td>
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<tr>
<td>50% of set flow</td>
<td>50% of set flow</td>
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<tr>
<td>Graphical trends of set and measured values</td>
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<td>FiO₂</td>
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<tr>
<td>Const Flow / Device flow</td>
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<td>Pmax / Pmean</td>
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<td>✓</td>
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<td>Supported breathing systems</td>
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<td>✓</td>
</tr>
<tr>
<td>Single-limb ventilator breathing circuits</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

* Depending on country-specific approval
THE FOLLOWING DRÄGER ACCESSORIES SUPPORT THE O₂-THERAPY

Dräger Aquapor H300
The Dräger Aquapor H300 respiratory humidifier ensures that patients who require mechanical breathing support are supplied with optimally conditioned breathing gas. Active humidification can be used in various applications, e.g. during high flow therapy.

Breathing Circuits
Protect your patients reliably and increase patient safety. As the interface between the patient and the anaesthesia or ventilation device, our breathing circuits are a central component of the medical system.

Hi-Flow Star – Nasal oxygen delivery system for adult patients
High flow therapy can effectively deliver more oxygen to the patients than Venturibased systems with a higher level comfort. In addition, it can help patients recover faster and avoid invasive respiratory therapy.
- Hi-Flow Star Nasal Cannula, available in sizes S/M/L
- Hi-Flow Star System – Heated inspiratory breathing circuit
- Hi-Flow Star Kit Aquapor – Heated inspiratory breathing circuit
(For use with the humidifier Dräger Aquapor H300)